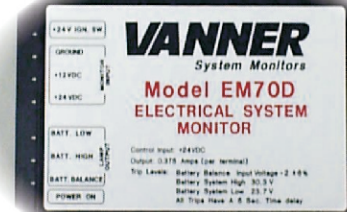


*Know what your vehicle's electrical system is doing with the Vanner electrical system monitor.*

### System Monitors Designed for Use In:

- ◆ Transit Buses
- ◆ Tour Buses
- ◆ EMS Vehicles
- ◆ Boats
- ◆ Utility Vehicles
- ◆ RVs and Motor Homes



### Overview

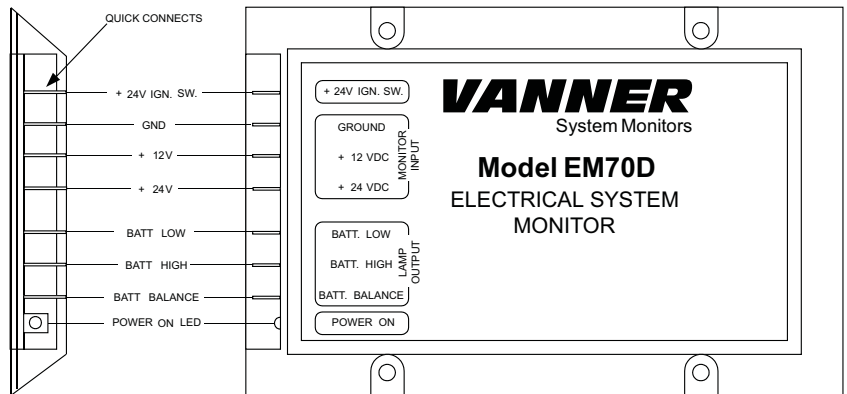
Vanner electrical system monitors sense several critical functions of a dual-voltage (24/12 Vdc) vehicle or boat electrical system. These electrical monitors are typically used with Vanner battery equalizer products.

### System Monitor Features:

- ◆ Continually monitors vehicle's electrical system
- ◆ Designed for dual 12 volt batteries operating at 24 Vdc
- ◆ Detects battery high/low voltage and battery balance conditions
- ◆ Takes the guesswork out of battery operation
- ◆ Operates status/warning lamps, control relays or alarms

### Model EM-70D Electrical System Monitor

The model EM-70D is wired to the system's ground, 12 volt DC, 24 volt DC and +24 volt ignition. By monitoring the two DC voltages, it can detect fault conditions, including battery voltage high (over 30.0 volts), battery voltage low (under 24.0 volts), and battery balance. A battery balance fault condition can occur when the 12 Vdc input is outside the range of (24Vdc input ÷ 2) +/- 6%.



System monitoring takes place only when the ignition is switched on. The EM-70D has a 5-second delay before the output terminal indicates an error condition. This feature prevents false indications (blinking) from occurring when a "step load" change in system loads causes a transient on the DC system. When a fault condition is detected, the EM-70D provides fault output signals that are switched to ground. These outputs can operate external warning lamps, alarm buzzers or control relays, and are rated for 375 milliamps (0.375 amps) DC. These outputs are short circuit protected and are designed so they may be paralleled if less than three external lights are desired. It is also possible to install momentary light test switches (or just one light test switch if three isolating diodes are installed) which enable the operator to check the lamps to determine if they are functioning.

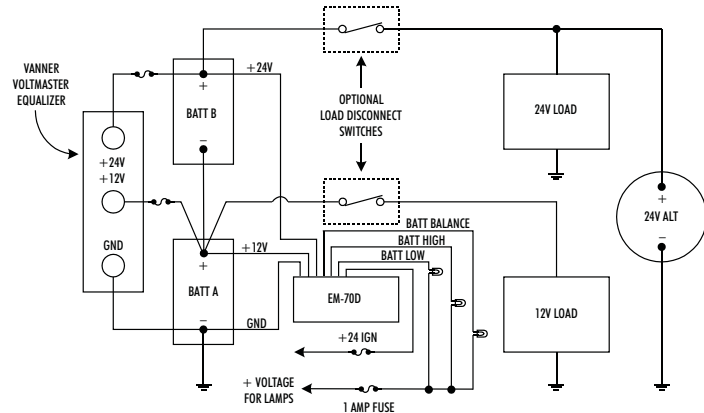
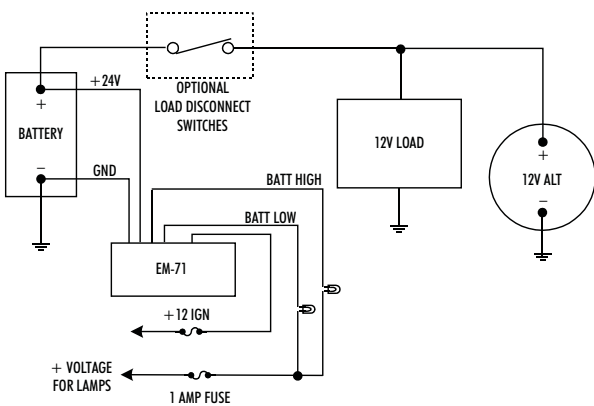
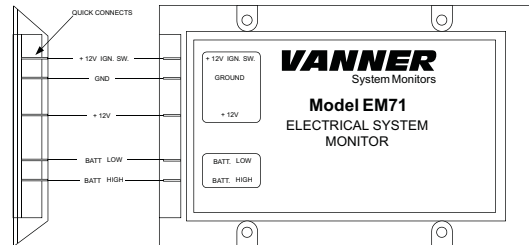
**EXPERIENCE THE POWER.**



## Model EM-71 Electrical System Monitor

The model EM-71 electrical system monitor senses the +12 volt DC battery voltage in a vehicle or boat electrical system. The EM-71 is wired to the system's ground, +12 volt DC battery and +12 volt DC ignition switch. The unit monitors the +12Vdc battery voltage and detects fault conditions of battery high voltage (over 15.0 volts\*) and battery low voltage (under 9.0 volts\*). When a fault condition is detected, the EM-71 provides fault output signals that are switched to ground. These outputs can operate external warning lamps, alarm buzzers or control relays, and are rated for 75 milliamps (0.375 amps) DC.

These outputs are short-circuit protected and designed so they may be paralleled if only a single external lamp (or other device) is desired. It is also possible to install momentary light test switches (or just one if two isolating diodes are installed) which enable the operator to check the lamps to determine if they are functioning.



Electrical System Monitor Specifications		
Model Number:	EM-70D	EM-71
Description:	Monitors voltages in a 24/12Vdc system Provides outputs for batt. high, batt. low and battery balance fault conditions.	Monitors the voltage of a 12 Vdc system and provides outputs for batt. high, and batt. low fault conditions.
Fault Conditions:		
Battery high voltage:	+24Vdc input over 30Vdc	+12Vdc input over 15 Vdc
Batter low voltage:	+24Vdc input under 24Vdc	+12Vdc input under 9Vdc
Battery balance:	+12Vdc input over $(+24Vdc \text{ input}/2) +6\%$ Or +12Vdc input over $(+24Vdc \text{ input}/2) -6\%$	The high and low voltage trip levels may be individually adjusted
Dimensions HxWxD:	.75" x 4.5" x 6.625"	.75" x 4.5" x 6.625"
Weight:	.84 lbs.	.84 lbs.

*Vanner's policy is one of continuous improvement. We reserve the right to change specifications without notice.*

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**800-AC POWER**

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